

# SEQUENCE LISTING

## (1) GENERAL INFORMATION:

- (i) APPLICANT: Alvarez, Vernon L.
- (ii) TITLE OF INVENTION: Antigen Binding Peptides (Abtides) From Peptide Libraries
- (iii) NUMBER OF SEQUENCES: 103
- (iv) CORRESPONDENCE ADDRESS:
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- (v) COMPUTER READABLE FORM:
  - (A) MEDIUM TYPE: Floppy disk
  - (B) COMPUTER: IBM PC compatible
  - (C) OPERATING SYSTEM: PC-DOS/MS-DOS
  - (D) SOFTWARE: PatentIn Release #1.0, Version #1.30
- (vi) CURRENT APPLICATION DATA:
  - (A) APPLICATION NUMBER: US 08/488,161
  - (B) FILING DATE: 07-JUN-1995
  - (C) CLASSIFICATION:
- (viii) ATTORNEY/AGENT INFORMATION:
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## (2) INFORMATION FOR SEQ ID NO:1:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 38 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

Gly	Ile	Ile	Asn	Ala	Asn	Asp	Pro	Leu	Pro	Phe	Trp	Phe	Met	Ser	Pro
1				5					10					15	
Tyr	Thr	Pro	Gly	Pro	Ala	Pro	Ile	Asp	Ile	Asn	Ala	Ser	Arg	Ala	Leu
			20					25						30	
Val	Ser	Asn	Glu	Ser	Gly										
					35										

## (2) INFORMATION FOR SEQ ID NO:2:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 38 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Asp Leu Ser Arg Asn Leu Asp Phe Gly Arg Phe Leu Leu Tyr Asn Ala  
 1 5 10 15  
 Tyr Val Pro Gly Phe Thr Pro Thr Phe Ile Ser Leu Thr Ala Glu His  
 20 25 30  
 Leu Ser Ser Pro Lys Gly  
 35

(2) INFORMATION FOR SEQ ID NO:3:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 38 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

Cys Gly Arg Ala Tyr Cys Leu Ser Gly Asn Tyr Asn Ile Phe Gly Ala  
 1 5 10 15  
 Leu Phe Pro Gly Val Ser Thr Pro Tyr Ala Asp Val Gly His Asp Asp  
 20 25 30  
 Ala Gln Ser Trp Arg Arg  
 35

(2) INFORMATION FOR SEQ ID NO:4:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 38 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Arg Cys Ser Pro Ile Trp Gly Ile Ser Tyr Pro Phe Gly Leu Leu Ser  
 1 5 10 15  
 Ser Asn Pro Gly Val Cys His Ser Ser Asp Ala Glu Thr Asn Ile Arg  
 20 25 30

Asn Asp Ile Leu Thr Thr  
35

(2) INFORMATION FOR SEQ ID NO:5:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 38 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Gly His Ser Asn Tyr Cys Phe Val Ser Thr Leu Gly Met Pro Ile Val  
1 5 10 15

Gly Phe Pro Ser Ile Asn Ala Arg Gly Leu Ile His Tyr Gly Gly Ser  
20 25 30

Asp Pro Arg Leu Ala Ala  
35

(2) INFORMATION FOR SEQ ID NO:6:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 9 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Trp Gln Gly Thr His Phe Pro Tyr Thr  
1 5

(2) INFORMATION FOR SEQ ID NO:7:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 8 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Leu Val Ser Lys Asn Asp Ser Gly  
1 5

(2) INFORMATION FOR SEQ ID NO:8:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 8 amino acids

- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

Gly Ser Asp Asn Lys Ser Val Leu  
1 5

(2) INFORMATION FOR SEQ ID NO:9:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 28 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro  
1 5 10 15  
Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg  
20 25

(2) INFORMATION FOR SEQ ID NO:10:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 6 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

Met Tyr Xaa Xaa Leu His  
1 5

(2) INFORMATION FOR SEQ ID NO:11:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 38 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

Leu Thr Gln Ser Ser Ala  
35

(1) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 38 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

Asn Pro Phe Thr Leu Ser  
35

(1) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 38 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

Gly Pro Ser Leu Ala Ser  
35

(i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 38 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

Thr Val Ala Thr Met His Asp Arg Leu His Ser Ala Pro Gly Ser Gly  
1 5 10 15  
Asn Leu Pro Gly Ser Tyr Asp Ile Lys Pro Ile Phe Lys Ala Gln Ser  
20 25 30  
Gly Ala Leu His Ser Thr  
35

(2) INFORMATION FOR SEQ ID NO:15:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 38 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Ile Asp Met Pro Gln Thr Ala Ser Thr Met Tyr Asn Met Leu His Arg  
1 5 10 15  
Asn Glu Pro Gly Gly Arg Lys Leu Ser Pro Pro Ala Asn Asp Met Pro  
20 25 30  
Pro Ala Leu Leu Lys Arg  
35

(2) INFORMATION FOR SEQ ID NO:16:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 22 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

Arg Leu Gly Asn His Val Trp Arg Glu Gly Gly Gly Met Tyr Gln Gln  
1 5 10 15  
Leu His His Asn Phe Pro  
20

(2) INFORMATION FOR SEQ ID NO:17:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 23 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Arg Asp Ser Ala Val Glu Asn Pro Ser Val Gly Gly Glu Ile Pro Met  
1 5 10 15  
Tyr Arg Tyr Leu His Gln Arg  
20

(2) INFORMATION FOR SEQ ID NO:18:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 23 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Pro Val Gln Lys Glu Tyr Gly Phe Gly Met Ser Gly Ala Ser Met Ile  
1 5 10 15  
Arg Leu Leu Arg Glu Thr Pro  
20

(2) INFORMATION FOR SEQ ID NO:19:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 23 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

Gln Lys Gly Gly Pro Gly Leu Leu Leu Tyr Gly Gly Asp Ser Met Tyr  
1 5 10 15  
Ile Thr Leu His Glu Pro Gly  
20

(2) INFORMATION FOR SEQ ID NO:20:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 15 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

Leu Tyr Ala Asn Pro Gly Met Tyr Ser Arg Leu His Ser Pro Ala  
 1 5 10 15

(2) INFORMATION FOR SEQ ID NO:21:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 10 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

Gly Met Tyr Ser Arg Leu His Ser Pro Ala  
 1 5 10

(2) INFORMATION FOR SEQ ID NO:22:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 35 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

His Cys Pro Pro Thr Pro Glu Thr Ser Cys Ala Thr Gln Thr Ile Thr  
 1 5 10 15  
 Phe Glu Ser Phe Lys Glu Asn Leu Lys Asp Phe Leu Leu Val Ile Pro  
 20 25 30  
 Phe Asp Cys  
 35

(2) INFORMATION FOR SEQ ID NO:23:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 43 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

Arg Glu Pro Val Val Gly Gly Lys Pro Trp Cys Arg Gly Pro Gly Gly  
 1 5 10 15  
 Leu Arg Trp Arg Gly Cys Gly Lys Ser Gln Phe Asp Lys Ile Ile Thr  
 20 25 30  
 Leu Ser Arg Asp Asn Arg Arg Asp Lys Arg Pro



## (2) INFORMATION FOR SEQ ID NO:24:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 43 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

(A) NAME/KEY: Modified-site  
 (B) LOCATION: 1  
 (D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Gly, Cys, Glu, or Val"

(ix) FEATURE:

(A) NAME/KEY: Modified-site  
 (B) LOCATION: 2  
 (D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Ala, Ser, Pro or Leu"

(ix) FEATURE:

(A) NAME/KEY: Modified-site  
 (B) LOCATION: 3  
 (D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Pro, Thr, His or Leu"

(ix) FEATURE:

(A) NAME/KEY: Modified-site  
 (B) LOCATION: 4  
 (D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Leu, Met, Gln, Gly, Ala, or Ser"

(ix) FEATURE:

(A) NAME/KEY: Modified-site  
 (B) LOCATION: 5  
 (D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Trp or Tyr"

(ix) FEATURE:

(A) NAME/KEY: Modified-site  
 (B) LOCATION: 6  
 (D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Ser, Cys, Lys or Thr"

(ix) FEATURE:

(A) NAME/KEY: Modified-site  
 (B) LOCATION: 7  
 (D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Glu, Ser, Cys, Asp, Val, or Arg"

(ix) FEATURE:

(A) NAME/KEY: Modified-site  
 (B) LOCATION: 8  
 (D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Asn, His, Lys, Ser or Glu"

(ix) FEATURE:

(A) NAME/KEY: Modified-site  
 (B) LOCATION: 9  
 (D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Leu, His, Arg, Asn, Gln, Thr or Gly"

- (ix) FEATURE:  
 (A) NAME/KEY: Modified-site  
 (B) LOCATION: 10  
 (D) OTHER INFORMATION: /label= Xaa  
 /note= "Xaa = Trp, Pro, Arg, Thr, or Asp"
- (ix) FEATURE:  
 (A) NAME/KEY: Modified-site  
 (B) LOCATION: 11  
 (D) OTHER INFORMATION: /label= Xaa  
 /note= "Xaa = Trp, Cys, Val, Leu, or Gly"
- (ix) FEATURE:  
 (A) NAME/KEY: Modified-site  
 (B) LOCATION: 12  
 (D) OTHER INFORMATION: /label= Xaa  
 /note= "Xaa = Ser, Thr, Met, or His"
- (ix) FEATURE:  
 (A) NAME/KEY: Modified-site  
 (B) LOCATION: 13  
 (D) OTHER INFORMATION: /label= Xaa  
 /note= "Xaa = Gly"
- (ix) FEATURE:  
 (A) NAME/KEY: Modified-site  
 (B) LOCATION: 14  
 (D) OTHER INFORMATION: /label= Xaa  
 /note= "Xaa = Ser, Ala, Gly, Asn, Gln, or His"
- (ix) FEATURE:  
 (A) NAME/KEY: Modified-site  
 (B) LOCATION: 15  
 (D) OTHER INFORMATION: /label= Xaa  
 /note= "Xaa = Trp, His, Gly, Ala, or Arg"
- (ix) FEATURE:  
 (A) NAME/KEY: Modified-site  
 (B) LOCATION: 16  
 (D) OTHER INFORMATION: /label= Xaa  
 /note= "Xaa = Gly, Thr, Glu, Pro, Val, or Trp"
- (ix) FEATURE:  
 (A) NAME/KEY: Modified-site  
 (B) LOCATION: 17  
 (D) OTHER INFORMATION: /label= Xaa  
 /note= "Xaa = Val, Phe, Trp, Lys, or Ala"
- (ix) FEATURE:  
 (A) NAME/KEY: Modified-site  
 (B) LOCATION: 18  
 (D) OTHER INFORMATION: /label= Xaa  
 /note= "Xaa = Lys, Gln, Asp, Glu, Arg, and Leu"
- (ix) FEATURE:  
 (A) NAME/KEY: Modified-site  
 (B) LOCATION: 19  
 (D) OTHER INFORMATION: /label= Xaa  
 /note= "Xaa = Arg, Phe, or Ser"
- (ix) FEATURE:  
 (A) NAME/KEY: Modified-site  
 (B) LOCATION: 20  
 (D) OTHER INFORMATION: /label= Xaa  
 /note= "Xaa = Pro, Ser, Ile, or His"
- (ix) FEATURE:

(A) NAME/KEY: Modified-site  
(B) LOCATION: 21  
(D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Gly"

(ix) FEATURE:  
(A) NAME/KEY: Modified-site  
(B) LOCATION: 22  
(D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Cys"

(ix) FEATURE:  
(A) NAME/KEY: Modified-site  
(B) LOCATION: 23  
(D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Gly"

(ix) FEATURE:  
(A) NAME/KEY: Modified-site  
(B) LOCATION: 24  
(D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Asp, Ser, Thr, or Asn"

(ix) FEATURE:  
(A) NAME/KEY: Modified-site  
(B) LOCATION: 25  
(D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Gly, Asp, or Leu"

(ix) FEATURE:  
(A) NAME/KEY: Modified-site  
(B) LOCATION: 26  
(D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Pro or Ser"

(ix) FEATURE:  
(A) NAME/KEY: Modified-site  
(B) LOCATION: 27  
(D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Met, Ser, Asp, Ile, Leu, or Arg"

(ix) FEATURE:  
(A) NAME/KEY: Modified-site  
(B) LOCATION: 28  
(D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Gly, Trp, Cys, Leu, Phe, Tyr, or Thr"

(ix) FEATURE:  
(A) NAME/KEY: Modified-site  
(B) LOCATION: 29  
(D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Ser, Asn, Val, Phe, His or Arg"

(ix) FEATURE:  
(A) NAME/KEY: Modified-site  
(B) LOCATION: 30  
(D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Asn, Arg, Ser, Met, or Arg"

(ix) FEATURE:  
(A) NAME/KEY: Modified-site  
(B) LOCATION: 31  
(D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Phe, Gln, Pro, or Val"

(ix) FEATURE:  
(A) NAME/KEY: Modified-site





Ser Phe Met Asp Tyr Phe Phe His Thr Pro Glu Pro Lys Pro Ala Gly  
1 5 10 15

Tyr Pro Asn Ala Tyr Thr Asp Pro Lys His Pro Ala  
20 25

(2) INFORMATION FOR SEQ ID NO:27:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 28 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

Ser Ser Ser Ile Phe Asp Tyr Ala Pro Phe Ser Trp Gly Ser Ala Gly  
1 5 10 15

Leu Ser Asn Ser Ser Ile Asn Val Phe Glu Arg Ser  
20 25

(2) INFORMATION FOR SEQ ID NO:28:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 28 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Ser Ala Ser Leu Trp Asp Ala Leu Gly Gly Trp Thr Thr Ser Ala Val  
1 5 10 15

Pro Ser Tyr Pro Arg Pro His Gln Thr Pro Gly Arg  
20 25

(2) INFORMATION FOR SEQ ID NO:29:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 28 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

Ser Leu Gly Leu Pro Trp Ile Asp Val Phe Gly Arg Ser Ser Ala Glu  
1 5 10 15

Pro Trp Pro Phe Gly Arg Thr Asn Leu Pro Arg Ser

20

25

## (2) INFORMATION FOR SEQ ID NO:30:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 27 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

Ser Val His Gly Ala Phe Leu Asp Ser Phe Phe Pro Trp Ala Ala Asp  
 1 5 10 15  
 Gly Pro His Gly Arg Gly Arg Leu Thr Ser Phe  
 20 25

## (2) INFORMATION FOR SEQ ID NO:31:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 43 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

Glu Glu Lys Gln Gly Gly Arg Trp Ser Thr Met Met Pro Arg Pro Trp  
 1 5 10 15  
 Cys His Glu Gly Gly Cys Gly Phe Leu Tyr Tyr Asp Ala Met Thr Lys  
 20 25 30  
 Pro Lys Thr Pro Pro Ile Met Arg Thr Ala Ala  
 35 40

## (2) INFORMATION FOR SEQ ID NO:32:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 43 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

Leu Pro Arg Pro Phe Asp Asp Ala Ser Trp Lys Leu Arg Ala Val Lys  
 1 5 10 15  
 Glu Ser Pro Asp Gly Cys Gly Phe Gly Ser Pro Leu Leu Phe Pro Pro  
 20 25 30

Tyr Ser Gly Leu Pro Thr Phe Ser Ser Cys Asp  
35 40

(2) INFORMATION FOR SEQ ID NO:33:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 39 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

Gly Ser Phe Glu Ser Ala Arg Gly Val Thr Cys Ile Gly Asn His Ser  
1 5 10 15

Ile Gly Ala His Gly Cys Gly Pro Leu Arg Ser Tyr Ala Ser Phe Asn  
20 25 30

Arg Gly Ser Gly Arg Arg His  
35

(2) INFORMATION FOR SEQ ID NO:34:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 38 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

Asp Gln Ile Gly Ser Arg Pro Gln Thr Thr Ser Arg Ser Ile Ser Gly  
1 5 10 15

Ser Trp Trp Glu Asn Ala Lys Thr Leu Trp Gln Gln Asp Tyr Ala Phe  
20 25 30

Ser Ala Pro Asn Ala Ala  
35

(2) INFORMATION FOR SEQ ID NO:35:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 38 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

Leu Ser Asp Ala Trp Gly Asn Phe Thr Thr Ser Tyr Arg Asp Ser Ala



1                      5                      10                      15  
 Gly Phe Pro Ser His Ala Met Thr Thr Ser Gln Gly Gly Lys Arg Asn  
                          20                      25                      30

His Ala Ser Arg Phe Pro  
                          35

(2) INFORMATION FOR SEQ ID NO:36:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 37 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

Val Gln Leu Asp Asp Thr Ser Pro Arg Ala Ser Gly Gln Glu Thr Ser  
 1                      5                      10                      15  
 Gln Ser Glu Tyr Asp Ala Arg Pro Leu Leu Ser Lys Phe Ala Ile Pro  
                          20                      25                      30  
 Arg Pro Trp Ser Arg  
                          35

(2) INFORMATION FOR SEQ ID NO:37:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 38 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

Ile Asp Ser Ser Lys Asn Arg Ile Ser Gly Thr Gly Tyr Leu Ser Phe  
 1                      5                      10                      15  
 Pro His Ile Arg His Ala Asn Arg Arg His Met Ala Asp Asp Ser Asn  
                          20                      25                      30  
 Leu Ala Pro Gly Pro Ser  
                          35

(2) INFORMATION FOR SEQ ID NO:38:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 43 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

Trp Ser Ile Gly Thr His Thr Gly Pro Glu Gly Lys Phe Arg Ile Pro  
1 5 10 15  
Cys Asp Arg Ser Gly Cys Gly Gly Thr Thr Leu Thr His Gly Gly Leu  
20 25 30  
Asn Ser Ser Pro Thr Gly Gln His Glu Arg Pro  
35 40

(2) INFORMATION FOR SEQ ID NO:39:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 43 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

Asp Pro Cys Glu Asp Gly Tyr Trp Leu Ser Ser Val Gly Arg Ala Gly  
1 5 10 15  
Ala Ser Ile Arg Gly Cys Gly Ala Ile Arg Arg Ser Ser Arg Thr Leu  
20 25 30  
Thr Ala Glu Tyr Ser Thr Arg Ala Ser Asn His  
35 40

(2) INFORMATION FOR SEQ ID NO:40:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 43 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

Gly Ser Lys Arg Ser Cys Trp Gly Thr Thr Ile Ser Asn Tyr Phe Arg  
1 5 10 15  
Pro Val Pro Glu Gly Cys Gly Ser Ala Ser Ser Ile Asn Pro Asn Thr  
20 25 30  
Asn Thr Gly Arg Leu Pro Ser Leu His Arg Gln  
35 40

(2) INFORMATION FOR SEQ ID NO:41:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 43 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

Ser Ser Ala Ser Ser Gly Cys Leu Gly Arg Ala Glu His Leu Asp Leu  
1 5 10 15  
Asp Ser Val Trp Gly Cys Gly Ser Gln Ala Asp Met Ser Arg Arg Tyr  
20 25 30  
Ser Pro Trp Tyr Gly Arg Pro Arg Thr Gly Val  
35 40

(2) INFORMATION FOR SEQ ID NO:42:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 43 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

Asn Val Met Trp Ser Ser Ser Lys Ala Gly Ile Arg Asp Cys Ser Gln  
1 5 10 15  
Val Pro Pro Gly Gly Cys Gly Pro Val Asn Arg His Arg Ala Ser Pro  
20 25 30  
Pro Leu Thr Pro Phe Arg His Gly Ser Ile Arg  
35 40

(2) INFORMATION FOR SEQ ID NO:43:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 38 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

Pro Leu Thr Ser Gly Ser Ser Ser Glu Tyr Arg Asn Arg Asp Asp Cys  
1 5 10 15  
Pro Val Tyr Lys Tyr Ala Thr Asn Cys Pro Arg Leu Asn Phe Ser Pro  
20 25 30  
Ser Arg Tyr Ser Pro Phe  
35

(2) INFORMATION FOR SEQ ID NO:44:

- (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 38 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

Gly Asp Ala Tyr Gly Gly Ile Phe Ser Arg Pro Arg Gln Gly Leu Ala  
 1 5 10 15  
 Asp Ser Tyr Ile His Ala Ser Tyr Thr Gly Lys His Phe Phe Arg Gly  
 20 25 30  
 Pro Arg Pro Pro Thr Arg  
 35

(2) INFORMATION FOR SEQ ID NO:45:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 38 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

Ser Thr Cys Ile Gly Ala Glu Gly Glu Trp Lys Ser Phe His Asn Phe  
 1 5 10 15  
 Leu Gln Cys Arg Asp Ala Thr Ser Thr Ser Ser Ser Thr Leu Asp Pro  
 20 25 30  
 Thr Ala Leu Arg Phe Gly  
 35

(2) INFORMATION FOR SEQ ID NO:46:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 38 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

Tyr Ser Ala Thr Leu Trp Asp Gln Phe Gly Ser Arg Gln Val Glu Leu  
 1 5 10 15  
 Trp Ser Asn Arg His Ala Ser Ser Ala Leu Pro Phe Ala Ser Arg Ala  
 20 25 30  
 Ser Val Leu Gly Ser Arg

## (2) INFORMATION FOR SEQ ID NO:47:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 26 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

Ile Leu Gly Trp Pro Phe Leu Thr Gly Leu Gly Asp Ser Thr Val His  
 1 5 10 15

Pro Arg Gly Arg Lys Gly Thr Asp Pro Ser  
 20 25

## (2) INFORMATION FOR SEQ ID NO:48:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 28 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

Ser Ile Pro Ser Phe Ser Met Trp Leu Asn Gln Leu Gly Ser Ala Ala  
 1 5 10 15

Leu Pro Ser Lys Gly Asn Ser Gln Asp Arg Ser Asp  
 20 25

## (2) INFORMATION FOR SEQ ID NO:49:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 28 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

Ser Arg Asp Asp Ile Phe Thr Gly Gly Pro Leu Val Leu Phe Arg Gly  
 1 5 10 15

Ser Lys Thr Ser Asn His Asp Val His Ser Met Arg  
 20 25

## (2) INFORMATION FOR SEQ ID NO:50:

008770" 6.4343460

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 28 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:50:

Arg Ala Glu Leu Val Asn Trp Tyr Glu Trp Phe His Val Thr Ala Glu  
1 5 10 15  
Ala Glu Thr Pro Val Ile Asn Ser His Asn Met Thr  
20 25

(2) INFORMATION FOR SEQ ID NO:51:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 43 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

Gly Ala Pro Val Trp Arg Gly Asn Pro Arg Trp Arg Gly Pro Gly Gly  
1 5 10 15  
Phe Lys Trp Pro Gly Cys Gly Asn Gly Pro Met Cys Asn Thr Phe Thr  
20 25 30  
Pro Ala Arg Gly Gly Ser Arg Asn Asn Gly Pro  
35 40

(2) INFORMATION FOR SEQ ID NO:52:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 43 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:52:

Gly Ser Ala Ser Ser Cys Phe Pro Asn Phe Thr Ala Arg Gly Val Thr  
1 5 10 15  
Val Gly Phe Phe Gly Cys Gly Ser Pro Ala His Pro Ala Ala Pro Arg  
20 25 30  
Val Leu Asn Pro Ala Thr Asp Phe Pro Ala Pro  
35 40

(2) INFORMATION FOR SEQ ID NO:53:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 43 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:

Val Phe Arg Arg Thr Ala Arg Ser Ser Arg Pro Ile Gly Ala Thr Val  
1 5 10 15  
Phe Pro Trp Tyr Gly Cys Gly Asn Ser Asn Asp Glu Thr Leu Pro His  
20 25 30  
His Asp Ser Pro Pro Ser Phe Phe Leu Gly Ala  
35 40

(2) INFORMATION FOR SEQ ID NO:54:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 42 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:54:

Asn Thr Cys Trp Thr Asp Leu Phe Trp His Gly Leu Pro Gly Gly Asp  
1 5 10 15  
Leu Pro Arg Asp Gly Cys Gly Leu Pro Ser Glu Leu Thr Thr His Pro  
20 25 30  
Ser Arg Glu Arg Arg Asp Ala Ser Glu Asn  
35 40

(2) INFORMATION FOR SEQ ID NO:55:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 38 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:55:

Ile Asp Trp Asn Trp Leu Glu Arg Gly Gln His Asn Arg Gly Tyr Leu  
1 5 10 15  
His Ser Phe Pro Asp Ala Lys Ser Gln Pro Thr Arg Gly Pro Arg Val

30

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:61:

Gly Ser Pro Val Trp Ser Gly Asp Asn Arg Trp Arg Gly Ser Ser Pro  
1 5 10 15  
Leu Lys Arg Pro Gly Cys Gly Asn Gly Ala Lys Cys Asn Thr Leu Lys  
20 25 30  
Asp Asn Arg Lys Asp Ser Arg Lys Thr Lys His  
35 40

(2) INFORMATION FOR SEQ ID NO:62:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 42 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:62:

Gly Pro Leu Leu Pro Gly Glu Ala Ala Val His Gly Ala Arg Gly Leu  
1 5 10 15  
Met Arg Ser Gly Cys Gly Asn Gly Pro Thr Trp Asn Arg Leu Thr Ala  
20 25 30  
Ala Cys Arg Asp Ser Arg Asn Lys Gly Pro  
35 40

(2) INFORMATION FOR SEQ ID NO:63:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 43 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:63:

Gly Ser Pro Val Trp Met Gly Ser Thr Arg Trp Thr Gly His Gly Trp  
1 5 10 15  
Phe Arg Ser Gln Gly Cys Gly Asn Val Pro Arg Thr Asn Ser Cys Ala  
20 25 30  
Pro Ala Gly Lys Asp Ser Gln Asn Lys Gly Pro  
35 40

(2) INFORMATION FOR SEQ ID NO:64:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 43 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single

(D) TOPOLOGY: linear  
(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:64:

Gly Ala Pro Val Trp Arg Gly Asn Arg Trp Cys Ser Asp Asn Gly Glu  
1 5 10 15  
Leu Glu Arg Pro Gly Cys Gly Tyr Gly Pro Arg Phe Asn Ile Leu Pro  
20 25 30  
Pro Gly Arg Gly Asn Ser Arg Lys Pro Ser Pro  
35 40

(2) INFORMATION FOR SEQ ID NO:65:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 43 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:65:

Gly Ser Ser Gly Trp Lys Val Lys His Arg Cys Gly Gly Pro Gly Thr  
1 5 10 15  
Leu Gln Arg Pro Gly Cys Gly Asn Leu Pro Leu Gly His Thr Phe Pro  
20 25 30  
Pro Thr Arg Gly Gly Ser His Met Glu Gly Ala  
35 40

(2) INFORMATION FOR SEQ ID NO:66:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 43 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:66:

Gly Pro Arg Ser Trp Met Gly Gln Pro Arg Gly Ser Asp Ala Gly Ser  
1 5 10 15  
Cys Lys Trp Ala Gly Cys Gly Asp Ala Pro Met Trp Arg Ala Ser Thr  
20 25 30  
Pro Gly His Gly Gly Pro Pro Asn Arg Gly Ser  
35 40

(2) INFORMATION FOR SEQ ID NO:67:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 43 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:67:

Glu Ala Leu Val Cys Arg Gly Lys Pro Pro Trp Ser Gly Pro Ala Gly  
1 5 10 15  
Leu Leu Trp Gln Gly Cys Gly Thr Gly Pro Val Ser Arg Thr Phe Thr  
20 25 30  
Ser Ala Gln Gly Arg Ser Arg Asn Lys Thr Ser  
35 40

(2) INFORMATION FOR SEQ ID NO:68:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 43 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:68:

Gly Ala Pro Val Val Gly Asp Ile Leu Trp Cys Ser Gly Ala Arg Gly  
1 5 10 15  
Ala Lys Trp Pro Gly Cys Gly Lys Gly Pro Thr Asn Lys Thr Phe Ser  
20 25 30  
His Ser Arg Gly Gly Thr Gln Lys Ser Gly Leu  
35 40

(2) INFORMATION FOR SEQ ID NO:69:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 43 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:69:

Gly Ala Pro Val Ser Arg Cys Lys Pro Ala Cys Gly Gly Phe Trp Gly  
1 5 10 15  
Val Asn Trp Pro Gly Cys Gly Asn Ala Ser Met Cys Lys Thr Phe Thr  
20 25 30

Asn Gly His Gly Val Ser Ser Asp Asn Gly His  
35 40

(2) INFORMATION FOR SEQ ID NO:70:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 43 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:70:

Gly Ala His Gly Tyr Lys Asn Gly Ser Thr Cys Thr Gly Leu Gly Gly  
1 5 10 15  
Trp Arg Cys Arg Gly Cys Gly Lys Gly Ala Met Cys Asn Asn Pro Ser  
20 25 30  
Pro Ala Gly Gly Ala Tyr His Asn Gln Gly Pro  
35 40

(2) INFORMATION FOR SEQ ID NO:71:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 42 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:71:

Gly Pro Gln Gly Ser Glu His Gln Cys Cys Ser Gly His Trp Gly Leu  
1 5 10 15  
Lys Phe Pro Gly Cys Gly Asn Gly Pro Ile Cys Asn Asn Phe Thr Ala  
20 25 30  
Leu Arg Gly Ala Ser Arg Lys Asn Gly Pro  
35 40

(2) INFORMATION FOR SEQ ID NO:72:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 43 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:72:

Gly Glu Pro Val Trp Cys Arg His Ser Gly Gly Arg Val Gln Gly Gly



(xi) SEQUENCE DESCRIPTION: SEQ ID NO:75:

Cys Ala Pro Met Trp Ser Gly Lys Pro Pro Trp Cys Val Gly Gly Gly  
1 5 10 15  
Val Lys Phe Arg Gly Cys Gly Asn Arg Pro Asp Cys Asn Ile Ile Thr  
20 25 30  
Pro Arg Leu Val Glu Ser Arg Asp Lys Ala Leu  
35 40

(2) INFORMATION FOR SEQ ID NO:76:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 43 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:76:

Ala Asp Pro Val Cys Ser Arg Lys Pro Asp Gly Gly Gly Leu Arg Gly  
1 5 10 15  
Leu Arg Trp Pro Gly Cys Gly Lys Gly Pro Ile Leu Tyr Asn Val Thr  
20 25 30  
Ala Ala Arg Gly Gly Ser Arg Asn Asn Gly Pro  
35 40

(2) INFORMATION FOR SEQ ID NO:77:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 43 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:77:

Gly Thr Arg Val Pro Pro Gly Phe Ala Leu Arg Gly Gly Arg Asp Gly  
1 5 10 15  
Leu Ser Trp Ala Gly Cys Gly Lys Ala Pro Ile Ser Lys Thr Tyr Thr  
20 25 30  
Ser Ala Arg Gly Arg Ser Arg Lys Lys Gly Ser  
35 40

(2) INFORMATION FOR SEQ ID NO:78:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 43 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:78:

Arg Ser Ala Val Ser Glu Gly Lys Pro Arg Glu Ile Val Pro Gly Gly  
1 5 10 15

Cys Met Trp Pro Gly Cys Gly Asn Gly Arg Lys Ser Asn Thr Leu Thr  
20 25 30

His Gly Pro Glu Gln Phe Gln Glu Ile Glu Pro  
35 40

(2) INFORMATION FOR SEQ ID NO:79:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 42 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:79:

Ser Ser Gly Val Gly Asn Gly Lys Pro Arg Ser Trp Ala Pro Asp Ala  
1 5 10 15

Leu Asn Gly Gly Cys Gly Asn Ile Gln Phe Ala Asn Thr Ile Thr Pro  
20 25 30

Asp Arg Gly Gly Ser Cys Asn Gln Thr Leu  
35 40

(2) INFORMATION FOR SEQ ID NO:80:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 43 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:80:

Gly Ser Ser Val Cys Gly Gly Gln Pro Ser Gly Arg Gly Phe Gly Gly  
1 5 10 15

Leu Pro Gly Pro Gly Cys Gly Asn Gly Pro Thr Ser Asn Thr Leu Thr  
20 25 30

Ser Ala Arg Gly Gly Phe Pro Asn Lys Gly Leu  
35 40

(2) INFORMATION FOR SEQ ID NO:81:

(i) SEQUENCE CHARACTERISTICS:



- (A) LENGTH: 43 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:81:

Gly Ala Pro Leu Trp Gln Gly Asp Pro Ala Asp Glu Val Leu Gly Gly  
 1 5 10 15  
 Ser Met Ile Pro Gly Cys Gly Ile Gly Ala Leu Ser Gln Thr Phe Thr  
 20 25 30  
 Pro Thr Pro Gly Gly Ser Arg Lys Asn Val Thr  
 35 40

(2) INFORMATION FOR SEQ ID NO:82:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 42 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:82:

Ala Gly Arg Glu Leu Arg Gln Asp Glu Gly Glu Gly Gly Ala Gly Ala  
 1 5 10 15  
 Asp Val Ala Arg Leu Arg Glu Gly Pro Ile Cys Ser Thr Phe Thr Pro  
 20 25 30  
 Ala Arg Gly Gly Ser Cys Pro Ser Gly Leu  
 35 40

(2) INFORMATION FOR SEQ ID NO:83:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 43 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:83:

Gln Ala Arg Val Ser Met Ala Ile Ser Cys Arg Ser Gly Pro Ser Asp  
 1 5 10 15  
 Leu Met His Gln Gly Cys Gly Tyr Gly Pro Arg Cys Asn Pro Asp Thr  
 20 25 30  
 Thr Asp Ser Gly Gly Ser His Thr Asn Thr Pro

## (2) INFORMATION FOR SEQ ID NO:84:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 43 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:84:

Gly Asp Pro Glu Cys Arg Gly Lys Pro Arg Gly Arg Trp Thr Gly Ser  
 1 5 10 15  
 Leu Ala Cys Thr Gly Cys Gly Asn Gly Pro Asn Ser Lys Ile Cys Thr  
 20 25 30  
 Arg Ala Arg Gly Val Ser Arg Asn Lys Gly Pro  
 35 40

## (2) INFORMATION FOR SEQ ID NO:85:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 43 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:85:

Ser Thr Pro Gly Cys Ser Gly Tyr Ser Gly Ser Gly Asp Pro Arg Cys  
 1 5 10 15  
 Leu Thr Cys Thr Ala Cys Gly Asn Gly His Thr Arg Lys Thr Leu Thr  
 20 25 30  
 Pro Ala His Gly Arg Ser Thr His Lys Glu Pro  
 35 40

## (2) INFORMATION FOR SEQ ID NO:86:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 43 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:86:

Gly Gln Pro Glu Cys Arg Ile Thr Ser Gly Cys Cys Gly Thr Asp Gly  
 1 5 10 15

Asn Lys Trp Leu Gly Cys Gly Lys Val Asp Met Cys Asn Thr Leu Asn  
20 25 30

Pro Ala Val Gly Cys His Gly Thr Asn Gly Ser  
35 40

(2) INFORMATION FOR SEQ ID NO:87:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 56 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:87:

CTGTGCCTCG AGBNNBNNBN NBNBNNBNN BNNBNNBNNB NNBNNBNNBN CCGCGG

56

(2) INFORMATION FOR SEQ ID NO:88:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 56 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:88:

CTGTGCTCTA GAVNVVNVNV NVNVNVNVNV VNVNVNVNVV NNVNVNVNVN CCGCGG

56

(2) INFORMATION FOR SEQ ID NO:89:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 49 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:89:

TCGAGBNNBN NBNBNNBNN BNNBNNBNNB NNBNNBNNBN NBNCCGCGG

49

(2) INFORMATION FOR SEQ ID NO:90:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 49 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

008770" 6294969

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:90:

CTAGTVNNVN NVNNVNNVN VNNVNNVNNV NNVNNVNNVN NVNCCGCGG

49

(2) INFORMATION FOR SEQ ID NO:91:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 38 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 5
- (D) OTHER INFORMATION: /label= Xaa

/note= "Xaa = Ser or Arg"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 18
- (D) OTHER INFORMATION: /label= Xaa

/note= "Xaa = Ser, Pro, Thr, or Ala"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 20
- (D) OTHER INFORMATION: /label= Xaa

/note= "Xaa = Val, Ala, Asp, Glu, or Gly"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:91:

Ser His Ser Ser Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

Xaa Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
20 25 30

Ser Arg Pro Ser Arg Thr  
35

(2) INFORMATION FOR SEQ ID NO:92:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 81 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:92:

GTGTGTCTCG AGNNBNBNBN NBNNBNBNBN BNNBNBNBNB NNBNNBNBNB NBNNBNBNBN

60

BNNBNBNBNB NNBACGCCA N

81

(2) INFORMATION FOR SEQ ID NO:93:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 66 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:93:

GTGTGTCTA GAVNNVNNVN NVNNVNNVNN VNNVNNVNNV NNVNNVNNVN NVNNVNNVNT 60  
GGCGTN 66

(2) INFORMATION FOR SEQ ID NO:94:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 74 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:94:

TCGAGNNBNB NBNBNNBNN BNNBNNBNNB NBNBNNBNNB NBNBNNBNNB BNNBNNBNNB 60  
NNBNNBNACG CCAN 74

(2) INFORMATION FOR SEQ ID NO:95:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 59 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:95:

CTAGAVNNVN NVNNVNNVNN VNNVNNVNNV NNVNNVNNVN NVNNVNNVNN VNTGGCGTN 59

(2) INFORMATION FOR SEQ ID NO:96:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 44 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site  
 (B) LOCATION: 4

(D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Ser or Arg"

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 25

(D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Tyr, His, Asn or Asp"

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 27

(D) OTHER INFORMATION: /label= Xaa  
/note= "Xaa = Ile, Met, Thr, Asn, Lys, Ser, or Arg"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:96:

His Ser Ser Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15  
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa  
20 25 30  
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Ser Arg  
35 40

(2) INFORMATION FOR SEQ ID NO:97:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 82 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:97:

GTGTGTCTCG AGNNNBNNBN NBNNBNNBNN BNNBNNBNNB NNBNNBNNBN NBNNBNNBNN 60  
BNNBNNBNNB NNBGGTTGTG GT 82

(2) INFORMATION FOR SEQ ID NO:98:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 81 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:98:

GTTGTGTCTA GAVNNVNNVN NVNNVNNVNN VNNVNNVNNV NNVNNVNNVN NVNNVNNVNN 60  
VNNVNNVNNV NNACCACAAC C 81

(2) INFORMATION FOR SEQ ID NO:99:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 75 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:99:

TCGAGNNNNB NBNBNNBNN BNNBNNBNNB NNBNNBNNBN NBNBNNBNN BNNBNNBNNB 60

NNBNNBGGTT GTGGT 75

(2) INFORMATION FOR SEQ ID NO:100:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 74 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:100:

CTAGAVNNVN NVNNVNNVNN VNNVNNVNNV NNVNNVNNVN NVNNVNNVNN VNNVNNVNNV 60

NNVNNACCAC AACC 74

(2) INFORMATION FOR SEQ ID NO:101:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 49 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site  
 (B) LOCATION: 4  
 (D) OTHER INFORMATION: /label= Xaa  
 /note= "Xaa = Ser or Arg"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:101:

His Ser Ser Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gly Cys Gly Xaa Xaa Xaa Xaa Xaa Xaa  
 20 25 30  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Ser  
 35 40 45

Arg

(2) INFORMATION FOR SEQ ID NO:102:

- (i) SEQUENCE CHARACTERISTICS:  
    (A) LENGTH: 69 base pairs  
    (B) TYPE: nucleic acid  
    (C) STRANDEDNESS: single  
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:102:

GGSGCSCCSG TSTGSAGSGG SAASCCSCGS TGSAGSGGSC CSGGSGGSTT SAASTGSCCS 60  
GGCTGCGGG 69

(2) INFORMATION FOR SEQ ID NO:103:

- (i) SEQUENCE CHARACTERISTICS:  
    (A) LENGTH: 69 base pairs  
    (B) TYPE: nucleic acid  
    (C) STRANDEDNESS: single  
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:103:

SGGSCCSTTS TTSCG3GASC CSCCSCGSGC SGGSGTSAAS GTSTTSCASA TSGGSCCSTT 60  
CCCGCAGCC 69